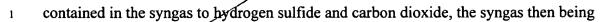
WHAT IS CLAIMED IS:

- 1. In a process for removing gaseous pollutants from combustion gases comprising
- contacting a catalyst absorber with said combustion gases until the catalyst absorber is at
- 4 least partially saturated, the improvement comprising regenerating the catalyst absorber
- with a regeneration stream of syngas produced in a gasification unit.
- 6 2. The process of claim 1, wherein the catalyst absorber comprises an oxidation
- 7 catalyst.

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- 8 3. The process of claim 2, wherein the oxidation catalyst is selected from the group
- 9 consisting of platinum, palladium, rhodium, cobalt, nickel, iron, copper, molybdenum
- and combinations thereof.
- 11 4. 7 The process of claim 3, wherein the oxidation catalyst is disposed on a high
- surface area support.
- 13 5. The process of claim 4, wherein the high surface area support is selected from the
- group consisting of alumina, zirconia, titania, silica and combinations thereof.
- 15 6. The process of claim 4, wherein the high surface area support is coated on a
- céramic or metal matrix structure.
- 17 The process of claim 3, wherein the oxidation catalyst is coated with an absorber
- selected from the group consisting of a hydroxide, carbonate, bicarbonate and a mixture
- thereof of an alkali or alkaline earth and mixtures thereof.
- 20 85 The process of claim 1, wherein the syngas is cleaned in an acid gas removal unit.
- 21 9. The process of claim 8, wherein the acid gas removal unit removes a substantial
- portion of any sulfur components contained in the syngas.
- 23 '10. The process of claim 8, wherein the syngas is passed through a shift reactor either
- before or after the syngas is cleaned in the acid gas removal unit.
- 25 11. The process of claim 10, wherein the shift reactor comprises shift catalyst.
- 26 12. The process of claim 11, wherein the shift catalyst converts at least a portion of
- 27 any carbon monoxide contained in the syngas to hydrogen and carbon dioxide.
- 28 13. The process of claim 11, wherein the shift catalyst converts at least a portion of
- any carbonyl sulfide contained in the syngas to hydrogen sulfide and carbon dioxide.

- 1 14. The process of claim 10, wherein the syngas is passed through a hydrogen sulfide
- removal unit, the hydrogen sulfide removal unit removing at least a portion of any
- 3 hydrogen sulfide contained in the syngas.
- 4 15. The process of claim 14, wherein the hydrogen sulfide removal unit comprises a
- 5 zinc oxide bed.
- 6 16. The process of claim 1, wherein a portion of the syngas is combusted so as to
- 7 produce power in a combustion turbine generator, thereby producing the combustion
- 8 gases.
- 9 17. The process of claim 16, wherein the combustion exhaust gases are cooled in a
- heat recovery steam generator.
- 11 18. The process of claim 17 wherein the catalyst absorber is located within the heat
- recovery steam generator.
- 13. The process of claim 18, wherein the heat recovery steam generator is not taken
- out of service while the catalyst absorber is being regenerated.
- 15 20. In a process for removing gaseous pollutants from combustion gases comprising
- contacting a catalyst absorber with said combustion gases until the catalyst absorber is at
- least partially saturated, the catalyst absorber comprising an oxidation catalyst selected
- from the group consisting of platinum, palladium, rhodium, cobalt, nickel, iron, copper,
- molybdenum and combinations thereof, the oxidation catalyst being disposed on a high
- surface area support selected from the group consisting of alumina, zirconia, titania, silica
- and combinations thereof, the high surface area support being coated on a ceramic or
- metal matrix structure, and the the oxidation catalyst being coated with an absorber
- selected from the group consisting of a hydroxide, carbonate, bicarbonate and a mixture
- thereof of an alkali or alkaline earth and mixtures thereof, the improvement comprising
- regenerating the catalyst absorber with a regeneration stream of syngas produced in a
- gasification unit, wherein the syngas is cleaned in an acid gas removal unit for sulfur
- component removal from the syngas, the syngas also being passed through a shift reactor
- either before or after/the acid gas removal unit, the shift reactor containing shift catalyst
- for conversion of at/least a portion of any carbon monoxide contained in the syngas to
- 30 hydrogen and carbon dioxide and conversion of at least a portion of any carbonyl sulfide



- 2 processed in a a zinc oxide bed.
- The process of claim 19, wherein a portion of the syngas is combusted so as to
- 4 produce power in a combustion turbine generator, thereby producing the combustion
- 5 gases.

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